

Delving beneath the surface of the Laboratory's 'lake'

Those who wander near the Central Cafeteria may happen upon a small “lake” officially called the Drainage Retention Basin. An unspectacular body of water, it’s clear that this basin is not entirely natural. It accumulates and retains water, yet water cannot percolate into the soil beneath it; thick polymer liner lies under a foot or more of basin sediment to prevent any natural passage. The basin perimeter is mainly grouted “rip rap,” — an engineered buffer — rather than a natural mosaic of riparian vegetation. Tributaries into the basin mainly consist of hoses from groundwater treatment units or concrete, manmade storm channels rather than meandering streams flowing over pebbles.

Yet, in this arid valley, an oasis of water no matter how simple or small creates quite the stir. If you have water, many will come; wildlife, plants and people. And in such stark environs, a basin constructed in 1991 for specific purposes (i.e., temporary detention of surface water flows during the wet season of up to 37 million gallons, support for the cleanup efforts of contaminated groundwater beneath the LLNL site and flood control) will have objectives that evolve over time. The basin still serves the purposes for which it was designed, yet it attracts others. Wildlife and plants established themselves in the basin, creating wetland habitats. These habitats, in turn, enhance the attractiveness of the basin.

In the midst of our urban environment, muskrats make their home within the basin from time-to-time, taking languid swims. Dawn or dusk affords glimpses of a handful of different birds (e.g., red-winged blackbirds, egrets, green herons, pied-billed grebes) that keep a vigilant eye on the shallows at the water’s edge. Dragonflies with intricate designs (look close) and vibrant colors dip into the water’s surface and



LLNL's wild side

By Jessie Coty



EPD WATER GUIDANCE AND MONITORING GROUP

Top: Construction of the Drainage Retention Basin in 1991. The basin liner placement prevents the infiltration of water into the subsurface to facilitate efforts to treat and clean the groundwater beneath the LLNL site.

Bottom: The construction site of the new Terascale Facility overlooks the Drainage Retention Basin; note the grouted “rip rap” perimeter of the basin, which makes plant growth difficult.



MICHAEL VAN HATTEM

Top right: The intricately designed wings and vibrantly colored body of dragonflies are easily seen at the basin.

Center: The bullfrog is a non-native, invasive frog that also inhabits the basin, yet threatens the survival of the native and federally threatened California red-legged frog.

Bottom right: The federally threatened California red-legged frog is known to inhabit the basin.

dart through edge vegetation.

The LLNL community walks, runs, bikes, watches birds and other wildlife, or sits conversing near and around the basin. Protecting the basin is important (it helps meet environmental regulations) and difficult.

Game fish adversely impact the area’s native California red-legged frogs, which are threatened with extinction and also inhabit the basin. Any

non-native species also disrupt the natural dynamics of the basin’s ecosystem, which is a simple aquatic system compared to natural lakes, such as Lake Tahoe, and unable to easily adapt to changes.

Freestyle swimming laps across the breadth of the basin? In the rainy season, this four-acre basin collects water from approximately a quarter of the LLNL site and 700-900 acres of off-site horse and cattle ranchland.

This overland flow is not the relatively pristine water that gallops from a river’s headwaters in Montana, but rather is a surface flow from an industrial, municipal, and agricultural area — not an ideal spot for swimming.

Use the basin as an alternative home for those pets or plants no longer wanted, such as goldfish or an abandoned aquarium’s vegetation? These caring gestures actually degrade the health of both species and the basin’s ecosystem.



JENNIFER GARRISON



MICHAEL VAN HATTEM



Not only is it ecologically detrimental to have non-native, invasive species introduced within the basin, these invasives further endanger the survival of the few native species already established. Finally, it is

against federal and state laws to engage in acts that harm the California red-legged frog. This means the simple act of placing your favorite non-native frog (e.g., bull frog) or game fish into the basin might be well-intentioned, but it’s illegal.

So in this hot and arid environment, an artificially constructed basin becomes a natural and attractive facet of the LLNL site.

Got water? They’ll come.